

CLAIMS

1. A transmitter to be connected to a receiver via a transmission line, the transmitter composing a signal transmission system together with the receiver, the transmitter comprising:

a communication section to be connected to a first end of the transmission line; and

a driving current control section for driving the transmission line with a predetermined amount of driving current, the driving current control section changing current amount of the driving current based on a control signal,

wherein, as the control signal, the communication section receives from the receiver being connected to a second end of the transmission line an instruction signal for instructing whether or not to change the current amount of the driving current, the instruction signal being generated based on whether a signal value detected at the second end of the transmission line falls within a predetermined range or not.

2. The transmitter of claim 1, wherein, if the signal value falls within the predetermined range, the communication section receives as the control signal an instruction signal
5 instructing to stop changing the current amount of the driving current, and based on the control signal, the driving current control section retains a present setting value of the current amount of the driving current.

10 3. The transmitter of claim 1, wherein, if the signal value is smaller than a lower limit value of the predetermined range, the communication section receives as the control signal an instruction signal instructing to increase the driving current, and based on the control signal, the driving
15 current control section increases the driving current.

4. The transmitter of claim 1, wherein, if the signal value is greater than an upper limit value of the predetermined range, the communication section receives as the control
20 signal an instruction signal instructing to decrease the

driving current, and based on the control signal, the driving current control section decreases the driving current.

5. The transmitter of claim 1, wherein the communication
5 section includes a first terminal connected to the first end of the transmission line and a second terminal for being connected to a control signal line to receive the instruction signal, the control signal line being different from the transmission line.

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6. The transmitter of claim 1, wherein,

the driving current control section is capable of transmitting a signal by driving the transmission line; and

transmission of a signal from the driving current
15 control section and reception of the control signal are performed by time division.

7. The transmitter of claim 1, wherein an output impedance value when the driving current control section drives the
20 transmission line is smaller than an output impedance value

of the receiver outputting the instruction signal.

8. The transmitter of claim 1, wherein,

the driving current control section is capable of
5 transmitting a signal by driving the transmission line; and

a rate with which the driving current control section
transmits a signal is faster than a rate with which a signal
is transmitted when the receiver outputs the instruction
signal.

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9. The transmitter of claim 1, wherein the transmission line
is detachable from the communication section.

10. A receiver to be connected to a transmitter via a
15 transmission line, the receiver composing a signal
transmission system together with the transmitter, the
transmitter being connected to a first end of the
transmission line, the receiver comprising:

a communication section connected to a second end of the
20 transmission line, the communication section receiving a

signal from the transmission line being driven with a predetermined driving current;

a detection section for detecting a signal value at the second end of the transmission line based on the signal, and
5 for generating a detection signal indicating whether the signal value falls within a predetermined range or not; and

a signal generation section for, based on the detection signal, generating an instruction signal for instructing whether or not to change current amount of the driving
10 current, wherein

the communication section outputs the instruction signal to the transmitter.

11. The receiver of claim 10, wherein, if a detection signal
15 indicating that the signal value falls within the predetermined range is generated by the detection section, the signal generation section generates an instruction signal instructing to stop changing the current amount of the driving current.

12. The receiver of claim 10, wherein if a detection signal indicating that the signal value is smaller than a lower limit value of the predetermined range is generated by the detection section, the signal generation section generates an instruction signal instructing to increase the driving current.

13. The receiver of claim 10, wherein if a detection signal indicating that the signal value is greater than an upper limit value of the predetermined range is generated by the detection section, the signal generation section generates an instruction signal instructing to decrease the driving current.

14. The receiver of claim 10, wherein the communication section includes a first terminal connected to the second end of the transmission line and a second terminal for being connected to a control signal line to output the instruction signal, the control signal line being different from the transmission line.

15. The receiver of claim 10, wherein,

the transmitter is capable of transmitting a signal by driving the transmission line with the predetermined driving
5 current; and

reception of a signal from the transmission line and transmission of the instruction signal are performed by time division.

10 16. The receiver of claim 10, wherein an output impedance value of the transmitter driving the transmission line with the predetermined driving current is smaller than an output impedance value from the terminal portion to the signal generation section.

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17. The receiver of claim 10, wherein a rate with which a signal is transmitted when the receiver outputs the instruction signal is slower than a rate with which the driving current control section transmits a signal by driving
20 the transmission line.

18. The receiver of claim 10, wherein the transmission line is detachable from the communication section.

5 19. A transmitting-end interface to be used in a transmitter to be connected to a receiving-end interface of a receiver via a transmission line, the transmitter composing a signal transmission system together with the receiver, the transmitting-end interface comprising:

10 a communication section to be connected to a first end of the transmission line; and

a driving current control section for driving the transmission line with a predetermined amount of driving current, the driving current control section changing current
15 amount of the driving current based on a control signal,

wherein, as the control signal, the communication section receives from the receiver being connected to a second end of the transmission line an instruction signal for instructing whether or not to change the current amount of
20 the driving current, the instruction signal being generated

based on whether a signal value detected at the second end of the transmission line falls within a predetermined range or not.

5 20. The transmitting-end interface of claim 19, wherein the communication section includes a first terminal connected to the first end of the transmission line and a second terminal for being connected to a control signal line to receive the instruction signal, the control signal line being different
10 from the transmission line.

21. The transmitting-end interface of claim 19, wherein,
the driving current control section is capable of transmitting a signal by driving the transmission line; and
15 transmission of a signal from the driving current control section and reception of the control signal are performed by time division.

22. The transmitting-end interface of claim 19, wherein an
20 output impedance value when the driving current control

section drives the transmission line is smaller than an output impedance value of the receiver outputting the instruction signal.

5 23. The transmitting-end interface of claim 19, wherein,

the driving current control section is capable of transmitting a signal by driving the transmission line; and

a rate with which the driving current control section transmits a signal is faster than a rate with which a signal
10 is transmitted when the receiver outputs the instruction signal.

24. A receiving-end interface to be used in a receiver to be connected to a transmitting-end interface of a transmitter
15 via a transmission line, the receiver composing a signal transmission system together with the transmitter, the transmitting-end interface being connected to a first end of the transmission line, the receiving-end interface comprising:

20 a communication section connected to a second end of the

transmission line, the communication section receiving a signal from the transmission line being driven with a predetermined driving current;

a detection section for detecting a signal value at the
5 second end of the transmission line based on the signal received at the communication section, and for generating a detection signal indicating whether the signal value falls within a predetermined range or not; and

a signal generation section for, based on the detection
10 signal, generating an instruction signal for instructing whether or not to change current amount of the driving current, wherein

the communication section outputs the instruction signal to the transmitter.

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25. The receiving-end interface of claim 24, wherein the communication section includes a first terminal connected to the second end of the transmission line and a second terminal for being connected to a control signal line to output the
20 instruction signal, the control signal line being different

from the transmission line.

26. The receiving-end interface of claim 24, wherein,

the transmitter is capable of transmitting a signal by
5 driving the transmission line with the predetermined driving
current; and

reception of a signal from the transmission line and
transmission of the instruction signal are performed by time
division.

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27. The receiving-end interface of claim 24, wherein an
output impedance value of the transmitter driving the
transmission line with the predetermined driving current is
smaller than an output impedance value from the terminal
15 portion to the signal generation section.

28. The receiving-end interface of claim 24, wherein a rate
with which a signal is transmitted when the receiving-end
interface outputs the instruction signal is slower than a
20 rate with which the driving current control section transmits

a signal by driving the transmission line.

29. An interface system comprising the transmitting-end interface of claim 19 and the receiving-end interface of claim 24, wherein the transmitting-end interface and the receiving-end interface are connected via the transmission line.

30. A transmitting-end chip to be connected to a receiving-end chip via a transmission line, the transmitting-end chip composing a signal transmission system together with the receiving-end chip, the transmitting-end chip comprising:

a communication section to be connected to a first end of the transmission line; and

a driving current control section for driving the transmission line with a predetermined amount of driving current, the driving current control section changing current amount of the driving current based on a control signal,

wherein, as the control signal, the communication section receives from the receiver being connected to a

second end of the transmission line an instruction signal for
instructing whether or not to change the current amount of
the driving current, the instruction signal being generated
based on whether a signal value detected at the second end of
5 the transmission line falls within a predetermined range or
not.

31. The transmitting-end chip of claim 30, wherein the
communication section includes a first terminal connected to
10 the first end of the transmission line and a second terminal
for being connected to a control signal line to receive the
instruction signal, the control signal line being different
from the transmission line.

15 32. The transmitting-end chip of claim 30, wherein,

the driving current control section is capable of
transmitting a signal by driving the transmission line; and

transmission of a signal from the driving current
control section and reception of the control signal are
20 performed by time division.

33. The transmitting-end chip of claim 30, wherein an output impedance value when the driving current control section drives the transmission line is smaller than an output impedance value of the receiver outputting the instruction signal.

34. The transmitting-end chip of claim 30, wherein,
the driving current control section is capable of transmitting a signal by driving the transmission line; and
a rate with which the driving current control section transmits a signal is faster than a rate with which a signal is transmitted when the receiver outputs the instruction signal.

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35. A receiving-end chip to be connected to a transmitting-end chip via a transmission line, the receiving-end chip composing a signal transmission system together with the transmitting-end chip, the transmitting-end chip being connected to a first end of the transmission line, the

receiving-end chip comprising:

a communication section connected to a second end of the transmission line, the communication section receiving a signal from the transmission line being driven with a
5 predetermined driving current;

a detection section for detecting a signal value at the second end of the transmission line based on the signal, and for generating a detection signal indicating whether the signal value falls within a predetermined range or not; and

10 a signal generation section for, based on the detection signal received at the communication section, generating an instruction signal for instructing whether or not to change current amount of the driving current, wherein

the communication section outputs the instruction signal
15 to the transmitter.

36. The receiving-end chip of claim 35, wherein the communication section includes a first terminal connected to the second end of the transmission line and a second terminal
20 for being connected to a control signal line to output the

instruction signal, the control signal line being different from the transmission line.

37. The receiving-end chip of claim 35, wherein,

5 the transmitter is capable of transmitting a signal by driving the transmission line with the predetermined driving current; and

 reception of a signal from the transmission line and transmission of the instruction signal are performed by time
10 division.

38. The receiving-end chip of claim 35, wherein an output impedance value of the transmitter driving the transmission line with the predetermined driving current is smaller than
15 an output impedance value from the terminal portion to the signal generation section.

39. The receiving-end chip of claim 35, wherein a rate with which a signal is transmitted when the receiving-end chip
20 outputs the instruction signal is slower than a rate with

which the driving current control section transmits a signal
by driving the transmission line.

40. A chip-mounted board comprising the transmitting-end chip
5 of claim 30 and the receiving-end chip of claim 35, wherein
the transmitting-end chip and the receiving-end chip are
connected via the transmission line.

41. An impedance matching method for setting an output
10 impedance of a transmitter which is connected to a receiver
via a transmission line and composes a signal transmission
system together with the receiver, the transmitter including:
a communication section to be connected to a first end of the
transmission line; and a driving current control section for
15 driving the transmission line, the receiver being connected
to a second end of the transmission line,

the method comprising the steps of:

operating the driving current control section to drive
the transmission line with a predetermined amount of driving
20 current;

receiving, as a control signal for instructing whether
or not to change the current amount of the driving current,
an instruction signal generated based on whether a signal
value detected at the second end of the transmission line
5 falls within a predetermined range or not; and
changing the current amount of the driving current based
on the control signal.

42. The impedance matching method of claim 41, wherein,
10 the communication section includes a first terminal
connected to the first end of the transmission line and a
second terminal connected to a control signal line, the
control signal line being different from the transmission
line; and
15 the step of receiving receives the instruction signal at
the second terminal.

43. The impedance matching method of claim 41, wherein,
the step of driving operates the driving current control
20 section to transmit a signal by driving the transmission

line, and wherein

the method further comprises a step of performing, by time division, transmission of a signal from the driving current control section and reception of the control signal.

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44. The impedance matching method of claim 41, wherein an output impedance value when the driving current control section drives the transmission line is smaller than an output impedance value of the receiver outputting the instruction signal.

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45. The impedance matching method of claim 41, wherein,

the step of driving operates the driving current control section to transmit a signal by driving the transmission

15 line; and

a rate with which the driving current control section transmits a signal is faster than a rate with which a signal is transmitted when the receiver outputs the instruction signal.

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46. An output impedance setting assisting method for, in a receiver which is connected to a transmitter via a transmission line and composes a signal transmission system together with the transmitter, assisting in setting an output
5 impedance of the transmitter, the transmitter being connected to a first end of the transmission line, the receiver including: a communication section connected to a second end of the transmission line; and a detection section for detecting a signal value at a predetermined position,

10 the method comprising the steps of:

receiving, via the communication section, a signal from the transmission line being driven with a predetermined driving current;

detecting, by using the detection section, a signal
15 value at the second end of the transmission line based on the signal;

generating a detection signal indicating whether the signal value falls within a predetermined range or not;

based on the detection signal, determining whether or
20 not to change the current amount of the driving current with

which the transmission line is driven;

generating an instruction signal indicating the result of determination; and

outputting the instruction signal to the transmitter via
5 the communication section.

47. The output impedance setting assisting method of claim 46, wherein,

the communication section includes a first terminal
10 connected to the second end of the transmission line and a second terminal connected to a control signal line, the control signal line being different from the transmission line; and

the step of receiving receives the instruction signal at
15 the second terminal.

48. The output impedance setting assisting method of claim 46, wherein,

the transmitter is capable of transmitting a signal by
20 driving the transmission line with the predetermined driving

current, and wherein

the method further comprises a step of performing, by time division, reception of a signal from the transmission line and transmission of the instruction signal.

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49. The output impedance setting assisting method of claim 46, wherein an output impedance value of the transmitter driving the transmission line with the predetermined driving current is smaller than an output
10 impedance value from the terminal portion to the signal generation section.

50. The output impedance setting assisting method of claim 46, wherein a rate with which a signal is transmitted
15 when the receiver outputs the instruction signal is slower than a rate with which the driving current control section transmits a signal by driving the transmission line.

51. A computer program to be executed in a transmitter which
20 is connected to a receiver via a transmission line and

composes a signal transmission system together with the receiver, the transmitter including: a communication section to be connected to a first end of the transmission line; and a driving current control section for driving the transmission line, the receiver being connected to a second end of the transmission line,

the computer program comprising the steps of:

operating the driving current control section to drive the transmission line with a predetermined amount of driving current;

causing the communication section to receive, as a control signal for instructing whether or not to change the current amount of the driving current, an instruction signal generated at the receiver based on whether a signal value detected at the second end of the transmission line falls within a predetermined range or not; and

changing the current amount of the driving current based on the control signal.

52. The computer program of claim 51, wherein,

the communication section includes a first terminal connected to the first end of the transmission line and a second terminal connected to a control signal line, the control signal line being different from the transmission
5 line; and

the instruction signal is received at the second terminal.

53. The computer program of claim 51, wherein,

10 the driving current control section is capable of transmitting a signal by driving the transmission line, and

the transmitter is caused to perform, by time division, transmission of a signal from the driving current control section and reception of the control signal.

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54. The computer program of claim 51, wherein an output impedance value when the driving current control section drives the transmission line is smaller than an output impedance value of the receiver outputting the instruction
20 signal.

55. The computer program of claim 51, wherein,

the driving current control section is capable of transmitting a signal by driving the transmission line; and

5 a rate with which the driving current control section transmits a signal is faster than a rate with which a signal is transmitted when the receiver outputs the instruction signal.

10 56. A computer program to be executed in a receiver which is connected to a transmitter via a transmission line and composes a signal transmission system together with the transmitter, the transmitter being connected to a first end of the transmission line, the receiver including: a
15 communication section connected to a second end of the transmission line; and a detection section for detecting a signal value at a predetermined position,

the computer program comprising the steps of:

receiving, via the communication section, a signal from
20 the transmission line being driven with a predetermined

driving current;

detecting, by using the detection section, a signal value at the second end of the transmission line based on the signal;

5 generating a detection signal indicating whether the signal value falls within a predetermined range or not;

based on the detection signal, determining whether or not to change the current amount of the driving current with which the transmission line is driven;

10 generating an instruction signal indicating the result of determination; and

outputting the instruction signal to the transmitter via the communication section.

15 57. The computer program of claim 56, wherein,

the communication section includes a first terminal connected to the second end of the transmission line and a second terminal connected to a control signal line, the control signal line being different from the transmission

20 line; and

the instruction signal is received at the second terminal.

58. The computer program of claim 56, wherein,

5 the transmitter is capable of transmitting a signal by driving the transmission line with the predetermined driving current, and

the receiver is caused to perform, by time division, reception of a signal from the transmission line and
10 transmission of the instruction signal.

59. The computer program of claim 56, wherein an output impedance value of the transmitter driving the transmission line with the predetermined driving current is smaller than
15 an output impedance value from the terminal portion to the signal generation section.

60. The computer program of claim 56, wherein a rate with which a signal is transmitted when the receiver outputs the
20 instruction signal is slower than a rate with which the

driving current control section transmits a signal by driving
the transmission line.